U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

TECHNICAL NOTE

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Bureau of Land Management U.S. DEPARTMENT OF THE INTERIOR

Subject: Sources of Mining Cost Data

Surface Operations

The Highway Departments in the various states put out compilations of equipment rental rates. These are in various forms e.g., Colorado issues a Construction Equipment Rental Rate Manual; California issues a list of rental rates with each highway contract offer. The rates are updated as necessary - every year or so. Copies of these rental rate compilations are usually available upon request.

Typically these rates are state-wide, for large projects and assume the specific equipment is at the job. Thus, adjustments may be necessary to allow for local conditions, scale of operations and procurement (move-in) costs.

It must be determined upon what basis the rental rates are figured with or without operator, allowance for profit, time, maintenance, etc.

Since these rates are on an hourly basis, adjustment may be necessary to provide for extended operations. Usually the daily rate is eight times the hourly rate, the weekly rate three times the daily and the monthly rate three times the weekly.

If the operation is to be long term (over a year) or continual, the equipment would probably be purchased rather than rented. In these situations the equipment of the proposed operation should be capitalized and figured on an actual cost of (1) ownership, (2) direct operating costs and (3) indirect costs.

Local dealers in heavy construction equipment will often supply data as to cost of equipment, allowance for maintenance and repair, fuel requirements, productive capacity and rate of depreciation. NOTE: On heavy equipment tires are usually figured separately and may be a major operating expense.

Caterpillar Tractor Company, Peoria, Illinois, puts out an informative booklet, FUNDAMENTALS OF EARTHMOVING (free on request). The attached forms, showing calculations of equipment costs, are adapted from their data.

Please send any additional references on this subject or other minerals subjects to DSC (D-310). If the complete article or publication is needed, DSC (D-310) will attempt to obtain a copy or a loan for you.

HOURLY OWNING & OPERATING COST ESTIMATE WORK SHEET

Machine: D9E (Tire Size) ---

Attachments: Cushion pushin

Delivered Price ..... $ 44,945

Approximate Tire Replacement Cost ..... $ --

Depreciation Value (Delivered Price Less Tires) ..... $ 44,945

Depreciation Period ..... Years 5 Hours 10,000

OWNING COSTS

- Depreciation: Dep. Val. 44,945 ÷ Ser. Life, Hrs 10,000 ..... $ 4.49
- Int., Ins., Taxes: $.03 x Del. Price 44,945 ÷ 1000 ..... 1.35

Total Hourly Owning Cost ..... $ 5.84

OPERATING COSTS

- Fuels and Lubricants:

Diesel Fuel: 14.9 gph x $ .15 per gal. 2.24

Gasoline (start & clean): $.03 per hour ..... .03

Lube Oil, crankcase: .14 gph x $ 1.00 per gal. ..... .14

Lube Oil, trans. & fin. dr.: .04 gph x $1.00 per gal. ..... .04

Hyd. Oil, ~~xxxxxxx~~ .01 gph x $1.00 per gal. ..... .01

Filters: $____ replace. cost ÷ ____ hrs. (oil change period). .06

Grease: ____ lbs./hr. x $_____ per lb. ..... --

- Repairs (including labor): 90 % x hourly dep. cost 4.04
- Tires: replace. cost $_____ ÷ tire life (hrs.) _____ .....

Total Hourly Operating Cost ..... $ 6.56

OPERATOR'S WAGE 3.00

TOTAL HOURLY OWNING AND OPERATING COST ..... $ 15.40

ESTIMATING
HOURLY OWNING AND OPERATING COSTS

MACHINE PRICE INCL. ATTACHMENTS, DELIVERED: _____ MODEL 631B — 78,000

- LESS TIRE REPLACEMENT COST:
  - FRONT: _____
  - DRIVE: 2 — 4500
  - REAR: 2 — 4500
  - TOTAL TIRE REPLACEMENT COST: — 9000

- LESS RESALE OR TRADE-IN VALUE (OPTIONAL) — 14700

- NET VALUE FOR DEPRECIATION: (15% original) — 63300

OWNING COSTS

1 DEPRECIATION: NET DEPRECIATION VALUE / DEPRECIATION PERIOD IN HOURS = 63,000 / 10000 hrs = 7.35

2 INTEREST, INSURANCE, TAXES:
ANNUAL RATES: INT. 7 %, INS. .75 %, TAXES 1 %

ESTIMATED ANNUAL USE: 5000 HOURS

FACTOR X DELIVERED PRICE / 1000 = _____ X _____ / 1000 = 2.20

TOTAL OWNING COSTS _____

OPERATING COSTS

		CONSUMPTION		UNIT COST		
3	FUEL:	12	X	15	=	1.80

4 LUBRICANTS, FILTERS, GREASE:

	CONSUMPTION		UNIT COST		TOTAL	
ENGINE	_____	X	_____	=	_____	.50
TRANSMISSION	_____	X	_____	=	_____	
FINAL DRIVES	_____	X	_____	=	_____	
HYDRAULICS	_____	X	_____	=	_____	
GREASE	_____	X	_____	=	_____	
FILTERS				=	_____	.10

LUBRICANTS, FILTERS, GREASE SUB-TOTAL — .60

5 TIRES: REPLACEMENT COST / ESTIMATED LIFE = 9000 / 3000 hrs = 3.00

6 REPAIRS: REPAIR FACTOR X DELIVERED PRICE / 1000 = 70 X 89000 / 10,000 = 6.13

7 SPECIAL ITEMS: _____

SPECIAL ITEMS SUB-TOTAL — ~~0~~

TOTAL OPERATING COSTS — 21.08

8 OPERATOR'S HOURLY WAGE _____

TOTAL HOURLY OWNING AND OPERATING COSTS _____